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ISO 9001:2000 CERTIFIED

Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 27.03.2019

KERB STONE (CORE) TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	:	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
No.of Sample Tested	:	03
Date of Testing	:	27.03.2019
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{15}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	71.00	0.326	2338.46	1.42	0.960	28.90	14.72	15.90	15.26	19.08
2	50.00	73.00	0.339	2365.09	1.46	0.960	27.60	14.06	15.18	14.57	18.22
3	50.00	72.00	0.331	2341.35	1.44	0.960	26.80	13.65	14.74	14.15	17.69

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 15.02.2019

PRECAST SLAB 250mm Thick(CORE) TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Contractor	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	:	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
No.of Sample Tested	:	03
Date of Testing	:	15.02.2019
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	100.00	132.00	2.436	2349.71	1.32	0.960	132.50	16.87	18.22	17.49	21.86
2	100.00	135.00	2.495	2353.14	1.35	0.960	133.90	17.05	18.41	17.68	22.10
3	100.00	136.00	2.548	2385.45	1.36	0.960	134.80	17.16	18.54	17.79	22.24

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date : 28.02.2019

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Sri. M S Venkatesh,** Contractor, Bangalore.

Name of Work : Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.

Name of Road : Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15

Date of Testing : 28.02.2019

Material Type : Wet Mix Macadam

Oven Dry Wt (gm): **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	25	25	0.3	99.8	95-100
22.4	2536	2561	25.6	74.4	60-80
11.2	2760	5321	53.2	46.8	40-60
4.75	1589	6910	69.1	30.9	25-40
2.36	1020	7930	79.3	20.7	15-30
0.600	398	8328	83.3	16.7	8-22
0.075	908	9236	92.4	7.6	0-8

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Job No.: CQCE/BBMP/MSV/QC/2018-19 **Date:** 28.02.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Type of Mix	Wet Mix Macadam
Date of Testing	28.02.2019

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	377	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	290	290	290	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.67	23.08	23.48	23.08

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CQCE/BBMP/MSV/QC/2018-19 28.02.2019

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	28.02.2019

Result : Flakiness Index = **12.36%**

Elongation Index = **13.98%**

Result : Combined Flakiness & Elongation index 26.34%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date : 28.02.2019

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Sri. M S Venkatesh,** Contractor, Bangalore.

Name of Work : Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.

Name of Road : Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15

Date of Testing : 28.02.2019

Material Type : Wet Mix Macadam

As per MORTH Table 400-13

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	24.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Date: 14.03.2019

Job No.: CQCE/BBMP/MSV/QC/2018-19

TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	:	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	14.03.2019

The results of the tests conducted on the bitumen sample using for Bituminous Macadam

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	66	60 to 70
2	Softening point, ^{0}C	46	Min. 45
3	Ductility at 27^{0}C, cm	100 >	Min. 50
4	Flash Point, ^{0}C	294	Min. 220

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Job No.: CQCE/BBMP/MSV/QC/2018-19 **Date:** 14.03.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	14.03.2019

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	377	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	292	292	292	
4	Aggregate Impact value = percent fines	22.13	22.55	22.96	
	100* (W_2/W_1)%				22.54

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

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Job No.: CQCE/BBMP/MSV/QC/2018-19 14.03.2019

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Macadam
Date of Testing	14.03.2019

Result : Flakiness Index = **12.45%**

Elongation Index = **13.98%**

Result : Combined Flakiness & Elongation index **26.43%**

Note:
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Job No.: CQCE/BBMP/MSV/QC/2018-19

Date: 14.03.2019

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	14.03.2019

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2021	2023	2025	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1266	1268	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2014	2016	2018	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	752	752	752	
6	Weight of oven dried aggregate	W_4 g	2008	2009	2010	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.684	2.686	2.687	2.686
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.706	2.711	2.716	2.711
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.30%	0.35%	0.40%	0.35%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 15.03.2019

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	15.03.2019

5250 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	350	6.67	6.67	93.33	90-100	
13.2	1645	31.33	38.00	62.00	56-88	
4.75	1520	28.95	66.95	33.05	16-36	
2.36	1236	23.54	90.50	9.50	4-19	
0.3	165	3.14	93.64	6.36	2-10	
0.075	56	1.07	94.70	5.30	0-8	

Total Weight of Sample: **5050** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	258	5.11	5.11	94.89	90-100	
13.2	1486	29.43	34.53	65.47	56-88	
4.75	1530	30.30	64.83	35.17	16-36	
2.36	986	19.52	84.36	15.64	4-19	
0.3	521	10.32	94.67	5.33	2-10	
0.075	62	1.23	95.90	4.10	0-8	

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 15.03.2019

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX
AASHTO T 164 & AASHTO T 30

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. M S Venkatesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	15.03.2019

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	481.5	481
3. Weight of Asphalt and Mineral matter Extracted,	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	18.5	19.00
7. Bitumen content in %	3.70	3.80
8. Average	3.75	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	24.5	5.09	5.09	94.91	90-100
13.2	149.6	31.07	36.16	63.84	56-88
4.75	175.3	36.41	72.56	27.44	16-36
2.36	66.9	13.89	86.46	13.54	4-19
0.3	35.3	7.33	93.79	6.21	2-10
0.075	14.5	3.01	96.80	3.20	0-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	25.2	5.04	5.04	94.96	90-100
13.2	144.6	28.92	33.96	66.04	56-88
4.75	168.9	33.78	67.74	32.26	16-36
2.36	69.4	13.88	81.62	18.38	4-19
0.3	54.2	10.84	92.46	7.54	2-10
0.075	12.89	2.58	95.04	4.96	0-8

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Date: 22.03.2019

TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads, Dasarahalli ward no.15
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	22.03.2019

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	68	60 to 70
2	Softening point, ^{0}C	46	Min. 40
3	Ductility at 27^{0}C, cm	100 >	Min. 75
4	Flash Point, ^{0}C	290	Min. 220

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 22.03.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Dasarahalli Main Road & other Roads, Dasarahalli ward no.15
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	22.03.2019

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	380	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	294	294	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.22	22.63	**22.43**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Date: 22.03.2019

TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	:	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	22.03.2019

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	68	60 to 70
2	Softening point, ^{0}C	46	Min. 40
3	Ductility at 27^{0}C, cm	100 >	Min. 75
4	Flash Point, ^{0}C	290	Min. 220

Note:

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 22.03.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	22.03.2019

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	380	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	294	294	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.22	22.63	22.43

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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Job No.: CQCE/BBMP/MSV/QC/2018-19

22.03.2019

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Bituminous Concrete
Date of Testing	22.03.2019

Result : Flakiness Index = **12.36%**

Elongation Index = **13.65%**

Result : Combined Flakiness & Elongation index **26.01%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

Note:

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Job No.: CQCE/BBMP/MSV/QC/2018-19 22.03.2019

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Type of Mix	Bituminous Concrete
Date of Testing	22.03.2019

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2022	2024	
2	Weight of basket suspended in water	W_2 g	754	754	754	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1266	1268	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2015	2017	2019	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	753	753	753	
6	Weight of oven dried aggregate	W_4 g	2010	2011	2012	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.684	2.685	2.686	2.685
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.702	2.707	2.712	2.707
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.25%	0.30%	0.35%	0.30%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No.: CQCE/BBMP/MSV/QC/2018-19 23.03.2019

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of theWork	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	23.03.2019

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	342	6.84	6.84	93.16	79 - 100	
9.5	566	11.32	18.16	81.84	70 - 88	
4.75	752	15.04	33.20	66.80	53 - 71	
2.36	628	12.56	45.76	54.24	42 - 58	
1.18	544	10.88	56.64	43.36	34 - 48	
0.600	635	12.70	69.34	30.66	26 - 38	
0.300	289	5.78	75.12	24.88	18 - 28	
0.150	440	8.80	83.92	16.08	12 - 20	
0.075	436	8.72	92.64	7.36	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	384	7.68	7.68	92.32	79 - 100	
9.5	530	10.60	18.28	81.72	70 - 88	
4.75	746	14.92	33.20	66.80	53 - 71	
2.36	620	12.40	45.60	54.40	42 - 58	
1.18	528	10.56	56.16	43.84	34 - 48	
0.600	465	9.30	65.46	34.54	26 - 38	
0.300	336	6.72	72.18	27.82	18 - 28	
0.150	452	9.04	81.22	18.78	12 - 20	
0.075	530	10.60	91.82	8.18	4 - 10	

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 23.03.2019

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	:	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	23.03.2019

The results of the tests conducted on the bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.56	10.21	9 Kn (min)
2	Marshal flow, mm	3.56	2.62	2 – 4
3	Percent air voids in Mineral Aggregate	13.25	14.25	13 – 15
4	Voids in Compacted Mix	3.68	4.21	3 – 6
5	Percent Voids filled with Bitumen	71.65	72.15	65 - 75
6	Density, g/cc	2.27	2.26	--

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Job No.: CQCE/BBMP/MSV/QC/2018-19 23.03.2019

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. M S Venkatesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Name of Road	Improvements of re-asphalting Ganesha Sawmill Road & other Roads, Dasarahalli ward no.15
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	23.03.2019

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469	468
3. Weight of Asphalt and Mineral matter Extracted, g	31	32
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	29	32
7. Bitumen content in %	5.80	6.40
8. Average	6.10	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	92.35	93.15	79-100
9.5	83.65	84.18	70-88
4.75	64.82	65.15	53-71
2.36	53.65	54.28	42-58
1.18	42.26	43.62	34-48
0.6	32.56	33.48	26-38
0.3	24.15	23.35	18-28
0.15	14.52	16.65	12-20
0.075	7.85	6.56	4-10

Note:

⇒ This test report should not be reproduced except in full, without written approval of the laboratory
⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory
⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

For CIVIL QUALITY CONSULTANTS & ENGINEERS

Authorised Signatory

Office & Laboratory : # 133, Bhuvaneshwarinagar, Dodda Basti Main Road, Bangalore - 560 056.
e-mail:civilqualityconsultants@gmail.com Ph: 080-23240644 / Mob: 8553518550

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